M e m o r a n d u m

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Subject: DOC-UVA Correlations

Regressions were computed to determine if there were correlations between simulated DOC and UVA values for the preliminary Delta Wetlands simulations documented by Michael Mierzwa in a DWR internal memo titled "Delta Wetlands Preliminary DSM2 Studies" dated August 26, 2001. Four simulations were conducted for the preliminary Delta Wetlands studies, a base case and three alternative scenarios. The three alternative scenarios represented ranges of return quality for DOC and UVA as shown in Table 1. The DOC and UVA concentrations simulated for the three alternatives were analyzed to determine if a correlation existed between DOC and UVA concentrations.

Table 1: DOC and UVA Concentrations for Alternative Scenarios

Bookend Simulation	DOC (mg/L)	UVA (cm^{-1})
Low	6	0.289
Middle	15	0.686
High	30	1.348

In order to determine if a DOC-UVA correlation exists simulated DOC and UVA concentrations from the three alternative simulations were considered together to cover the range of expected values. Results were analyzed at four locations: Old River at Bacon Island, Old River near Byron, the State Water Project (Clifton Court) and the Central Valley Project (Delta Mendota Canal). The four analysis locations are shown in Figure 1. Several correlation methods were applied to the data, and a linear correlation was determined to have the best fit considering the R-squared values. Linear correlations between DOC and UVA concentrations for each location are shown in Figure 2. Additionally the DOC and UVA data from the four locations were lumped together and a single linear correlation was computed as shown in Figure 3 The computed regression equations and R-squared values for the individual locations and lumped data are summarized in Table 2. For all of the correlations, the R-squared values ranged from 0.8971 to 0.9717. Lumping the data from the four locations provided a correlation with an R-squared value of 0.9373.

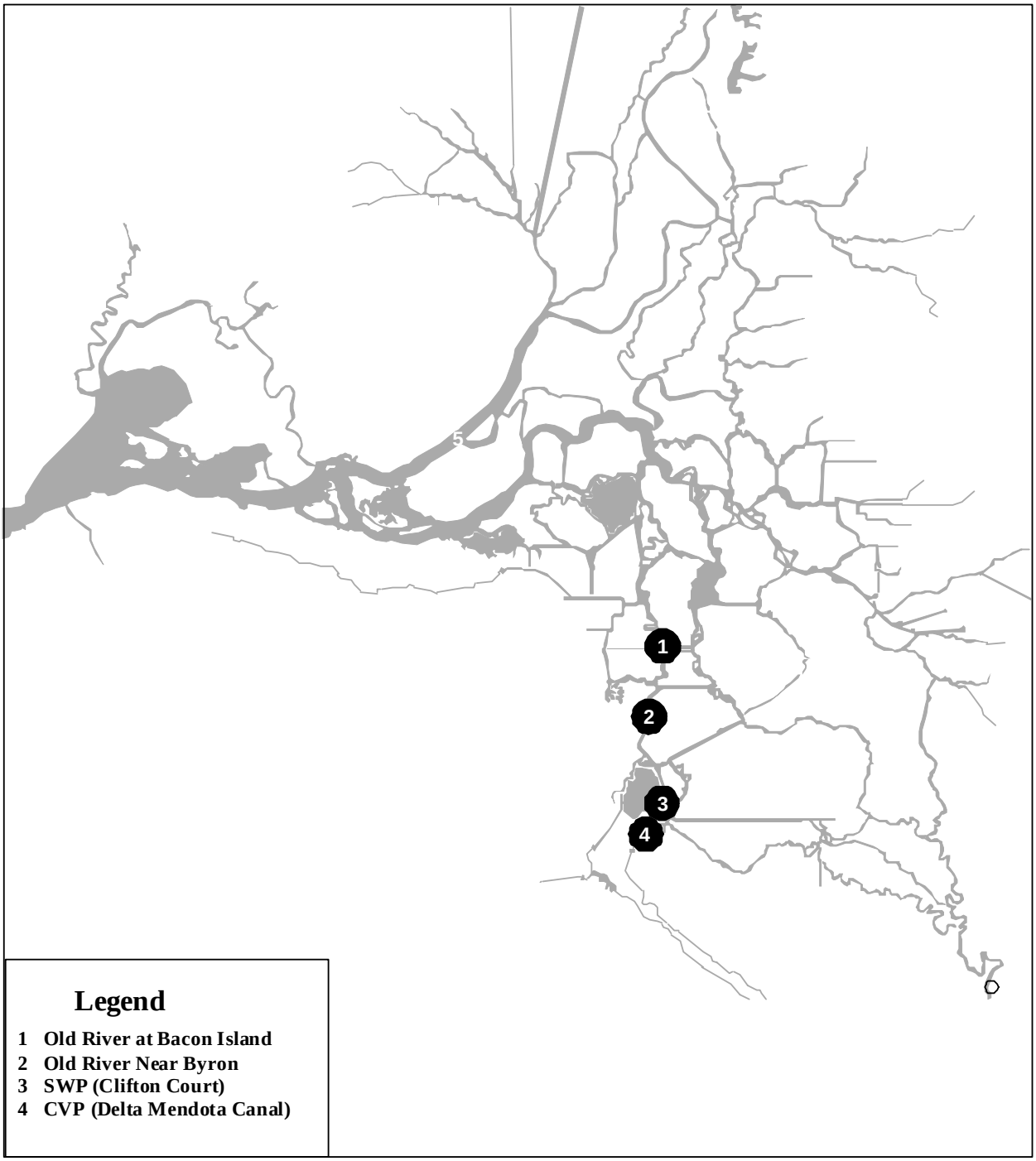

Figure 1: Map of DOC-UVA Correlation Analysis Locations

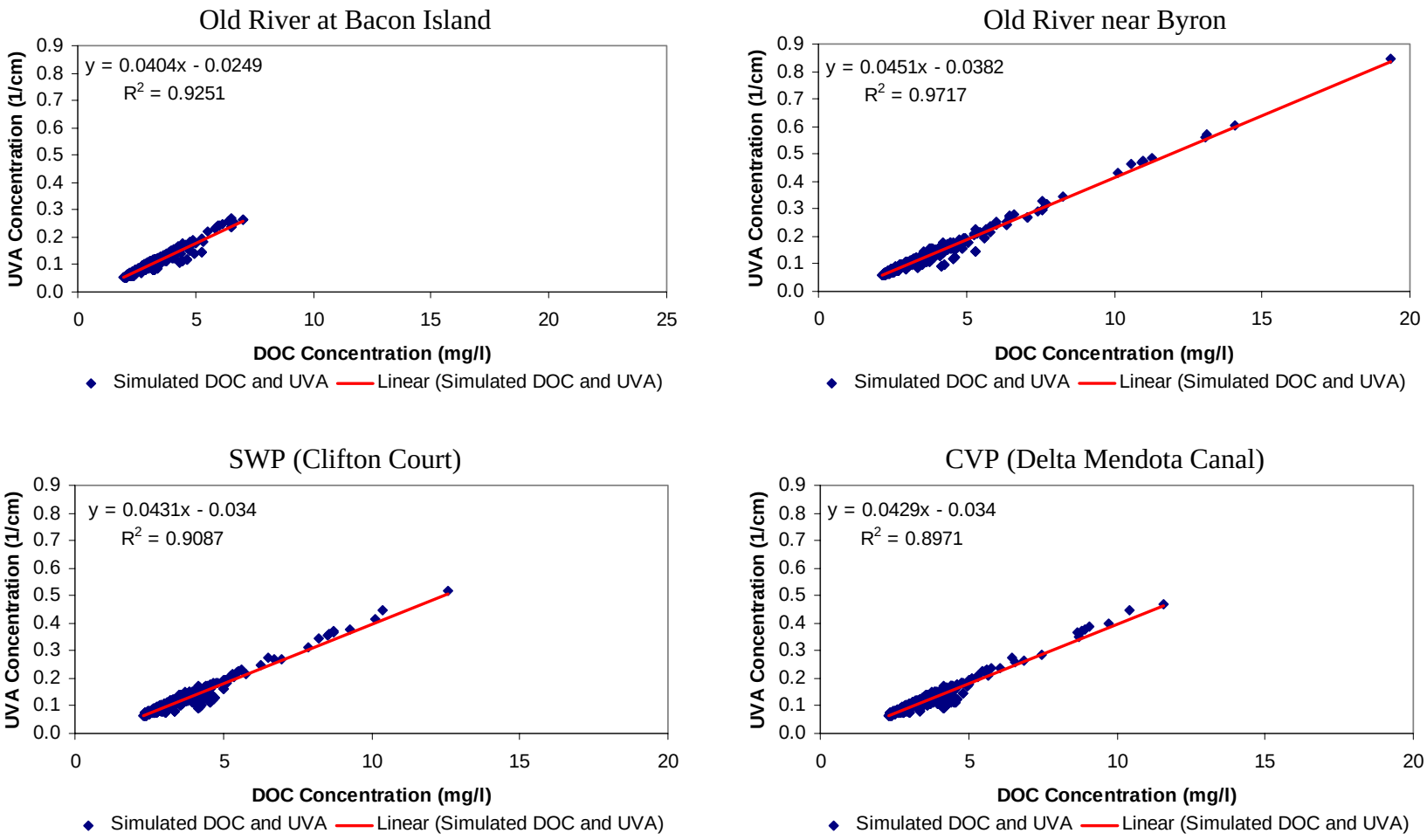

Figure 2: Linear Regressions for DOC and UVA at Four Delta Locations

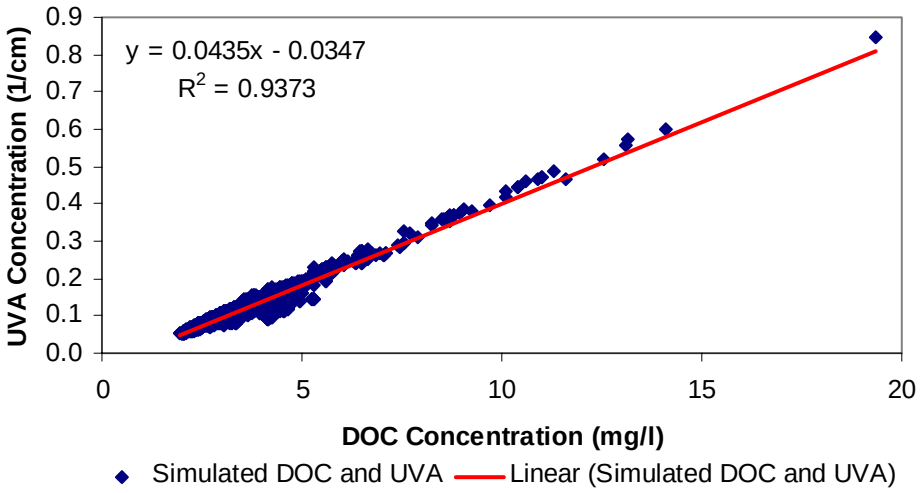

Figure 3: Linear Correlation between DOC and UVA Concentrations Lumping Data from Four Delta Locations

Table 2: DOC and UVA Correlation Equations and R-Squared Values

Location	Linear Regression DOC and UVA	R-Squared Value
Old River at Bacon Island	UVA = 0.0404*DOC - 0.0249	0.9251
Old River Near Byron	UVA = 0.0451*DOC - 0.0382	0.9717
SWP (Clifton Court)	UVA = 0.0431*DOC - 0.0340	0.9087
CVP (Delta Mendota Canal)	UVA = 0.0429*DOC - 0.0340	0.8971
All Locations	UVA = 0.0435*DOC – 0.0347	0.9373